

FIG. 1A

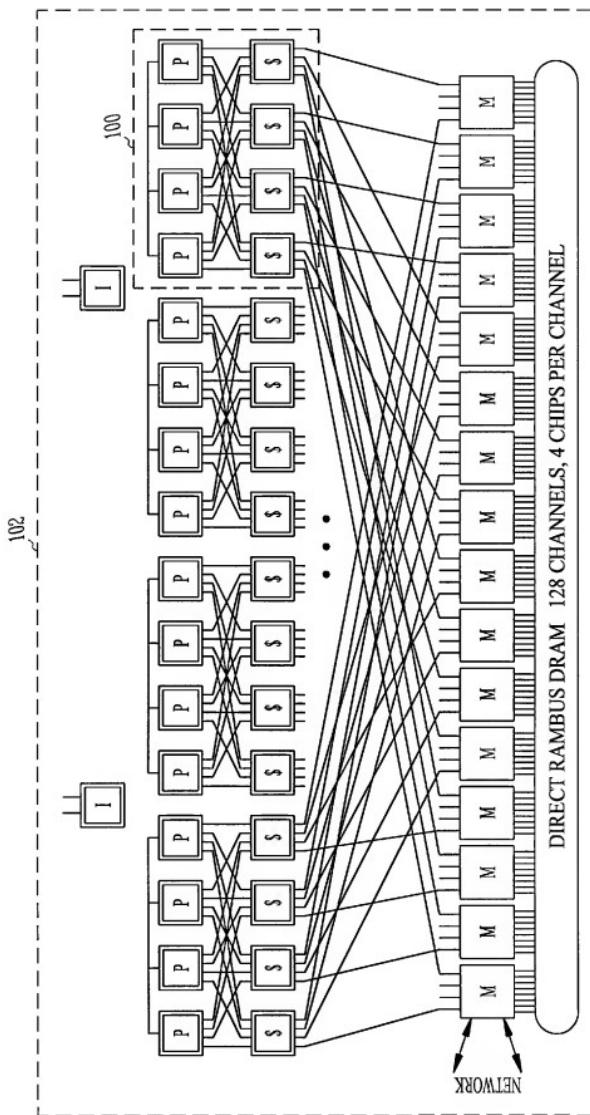


FIG. 1B

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PHYSICAL ADDRESS FORMAT

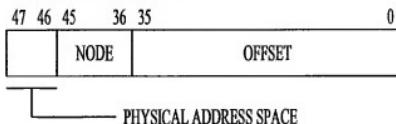


FIG. 2A

PHYSICAL ADDRESS MAP

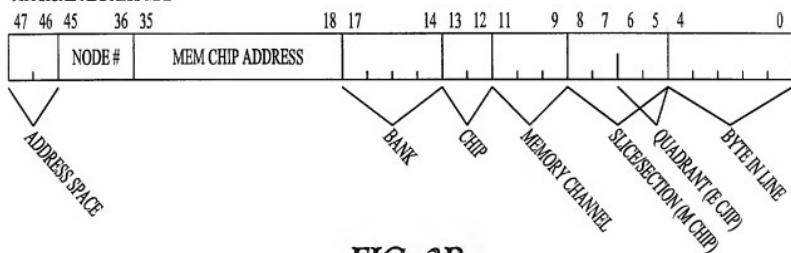
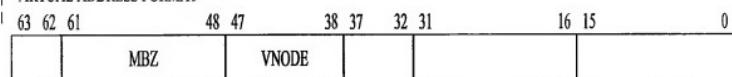


FIG. 2B

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VIRTUAL ADDRESS FORMAT



MEMORY REGION

POSSIBLE PAGE BOUNDARIES
(64 KB - 4 GB)

FIG. 3

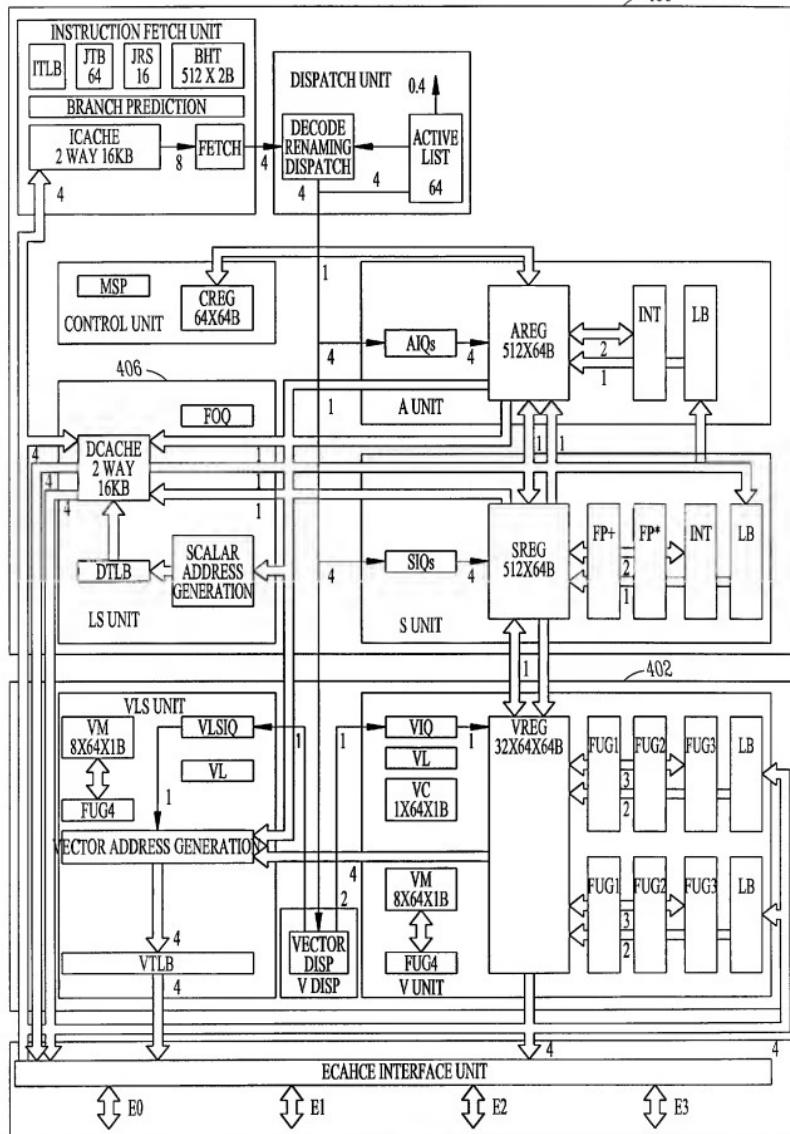


FIG. 4A

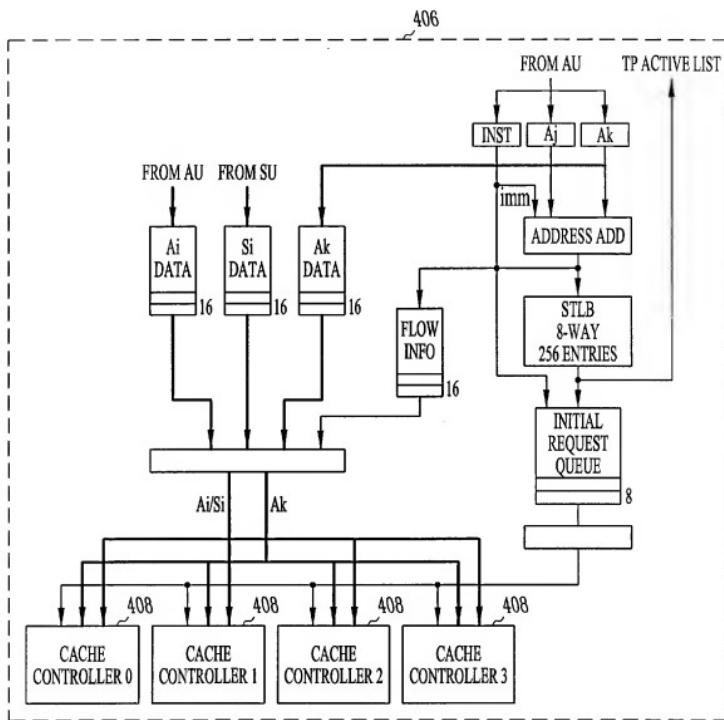


FIG. 4B

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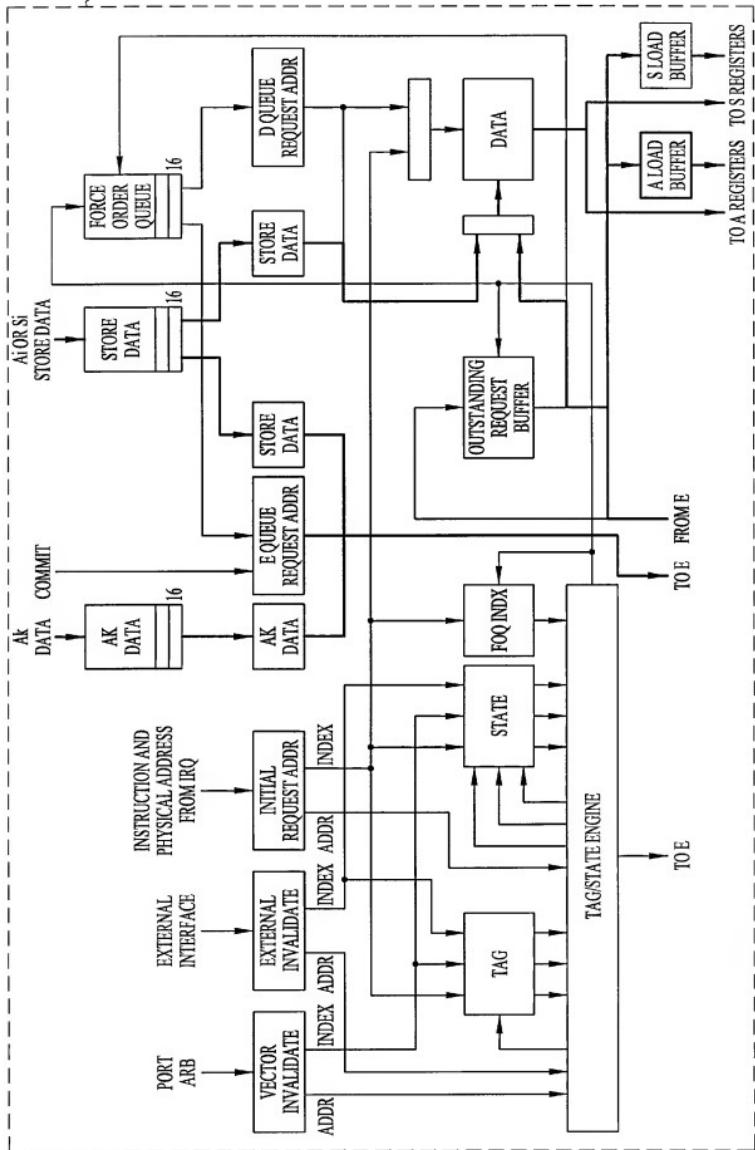


FIG. 4C

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DCACHE BYPASS	INITIAL REQUEST	TAG & STATE	FOQ INDEX MATCH	ACTION							
				MSG TO E	D\$	FOQ ENTRY	E	D	P	ALLOCATE	ORB ENTRY
NO	Read	MISS	NO	Read		Dummy	X	X		LRU Way	Read
			YES			ReadUC	X				Read nc†
		HIT	NO		Read						
			YES ++			Read	X				
	ReadShared	MISS	NO	ReadShared		Dummy	X	X		LRU Way	Read
			YES			ReadUC-Shared	X				Read nc
		HIT	NO		Read						
			YES ++			Read	X				
	ReadNA	MISS	NO	ReadNA							Read
			YES			ReadNA	X				Read nc
		HIT	NO		Read						
			YES			Read	X				
Write	Write	MISS	NO	ReadMod		SWrite	X	X	X	LRU Way	Read
			YES			SWrite	X				
		HIT	NO			SWrite	X	X			
			YES								
	WriteNA	MISS	NO			SWriteNA	X				
			YES								
		HIT	NO			SWrite	X	X			
			YES								
	Prefetch (to discard)	MISS	NO								
			YES								
		HIT	NO								
			YES								Discard

FIG. 4D

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DCACHE BYPASS	INITIAL REQUEST	TAG & STATE MATCH	FOQ INDEX	ACTION								
				MSG TO E	D\$	FOQ ENTRY	E	D	P	ALLOCATE	ORB ENTRY	OTHER
YES	Read	MISS	NO									
		YES	YES									
		HIT	NO			ReadUC	X					
		YES	YES									Read nc
	ReadShared	MISS	NO									
		YES	YES									
		HIT	NO			ReadUC-Shared	X					
		YES	YES									Read nc
	ReadNA	MISS	NO									
		YES	YES									
		HIT	NO			ReadNA	X					
		YES	YES									Read nc
	Write	MISS	NO									
		YES	YES									
		HIT	NO			SWrite	X	X				
		YES	YES									
	WriteNA	MISS	NO									
		YES	YES									
		HIT	NO			SWriteNA	X					
		YES	YES					X				
	Prefetch (to discard)	MISS	NO									
		YES	YES									
		HIT	NO									
		YES	YES									Discard
	IOWrite					ReadNA to IO space	X					Read nc
	IOWrite					SWriteNA to IO space	X					
	afadd $\pm\pm$					afadd (1 dw)	X					Read nc
	afax					afax (2 dw)	X					Read nc
	acsswap					acsswap (2 dw)	X					Read nc
	aadd					aadd (1 dw)	X					
	aax					aax (2 dw)	X					
	Sync_s_v					Sync_s_v	X					
	Sync_v_s					Sync_v_s	X					Hold IRQ
	Msync					Msync	X					Bypass Mode On
	Msync P					Msync	X					
	Msync V					Gsync	X					
	Gsync											

† A "Read nc" ORB entry specifies that the returning data will not be cached. Both ReadNA and ReadUC requests use "Read nc" ORB entries.

(A ReadNA tells the Ecache not to allocate the line. A ReadUC tells the Ecache that the P CHIP will not be caching the line but the Ecache still should.)

‡ Do more sophisticated match here (require pending or word match) †† Do more sophisticated match here (require pending or word match)

†† These five packet types are AMOs. The FOQ column indicates how many dwords of data accompany the request.

Three of the AMOs return data, and two do not.

FIG. 4E